

# Knowledge, attitude, and practice block survey on two different technique of giving inferior alveolar nerve

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## ABSTRACT

The aim of this study is to access the knowledge, attitude, and practice (KAP) on direct and indirect technique of giving inferior alveolar nerve block (IANB) among postgraduate dental students and staffs of all departments of Dental College in Chennai. A cross-sectional survey was carried out in Dental College, in October 2016. The questionnaires were distributed to 200 postgraduate dental students and staffs. All the forms were completely filled and collected. After conducting such a broad survey, we got the results that, among 200 dentists, only 20% people were aware about the indirect technique of giving IANB. Moreover, among those only few people were actually using the technique and were benefited out of it. Normally, all dentists use direct method of giving IANB, but in indirect method, there are less chances of getting positive aspiration and less chances of complications compare to direct technique. After conducting this survey, we got to know that many of postgraduates even staffs also are not aware about the advantages of using indirect technique. This KAP survey gives us result that many of postgraduates and staffs are not aware about the tech. Hence, we should conduct some programs in which we can educate, change their attitude, and encourage them to use much safer and another technique of giving IANB.

**Keywords:** Inferior alveolar nerve block, direct technique, indirect technique, local anesthesia

## Introduction

The inferior alveolar nerve block (IANB) in dentistry is a common procedure and involves the insertion of a needle near the mandibular foramen to deposit a solution of local anesthetic near to the IANB it enters the foramen, a region where the inferior alveolar vein and artery are also present.<sup>[1]</sup> The pterygoid plexus is located superior and posterior to the area where we deposit local anesthesia. Many techniques and associated modification have been published regarding this nerve block, and failure of anesthesia has been reported to be mainly due to technical errors in the local anesthetic administration technique by the dentist/surgeon and not because of the anatomical

variations that may present in some patients. Some operators may fail to identify the anatomical landmarks useful in applying the IANB and rely instead on assumptions as to where the needle should be positioned. The failure rate of IANB has been reported to be 20–25%.<sup>[2]</sup>

In this study, we are conducting a knowledge, attitude, and practice (KAP) survey among postgraduates and staffs of all department of Saveetha Dental College in Chennai in two different methods of giving IANB. Moreover, result reveals that more than 50% of postgraduates and staffs are not aware about indirect method of giving IANB, and through this, we are trying to aware the dentists about indirect method of giving IANB.

The use of the IANB and failure of anesthesia could be explained by a lack of operator awareness of the anatomical location of this foramen, especially since the location of the mandibular foramen may vary between people.<sup>[3]</sup> Successful IANB is related to the deposition of local anesthetic material very close to the nerve before it enters the mandibular foramen. Some researchers have shown that anesthesia of the IANB can also be achieved by the deposition of anesthetic material in the pterygomandibular space as the result of diffusion of the material toward the area of the mandibular

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foramen.<sup>[4]</sup>This technique is diffusion dependent and aims to avoid the large vessels in the area of the foramen. Many studies have discussed the location of the mandibular foramen.<sup>[2,5-10]</sup>Its location has been studied in relation to the anterior-posterior dimensions of the ramus of the mandible, the height of the ramus and changes of these dimensions with age, and also the foramen's position in relation to the occlusal plane.

Direct technique of giving IANB, also known as the direct thrust approach, remains one of the most commonly used to obtain mandibular anesthesia.<sup>[11]</sup> The direct IANB technique involves needle insertion into the pterygomandibular space by piercing the buccinator muscle, anteriorly. The local anesthetic solution needs to be deposited near the IAN which is the whole objective of this technique, just before it enters the mandibular foramen that leads into the mandibular canal. Although the exact location of where the needle tip should be located in relation to the IAN is hard to assess in any one patient due to the required ~20–25 mm depth of tissue penetration,<sup>[12]</sup> it is advantageous to administer the injection so that the tip of the needle contacts bone just superior to the tip of the lingula. This will ensure that local anesthetic solution is not deposited medial to the sphenomandibular ligament. The lingual nerve lies anterior and medial to the IAN and can be anesthetized during an IANB by withdrawing the needle and swinging the barrel of the syringe toward the dental midline.

The indirect IANB is a variation of the direct technique where the level and site of injection is the same. The depth of needle insertion is ~20–25 mm. In indirect technique (Fissure 1,2 3 technique), the same landmarks as direct technique are used to indicate correct height and mediolateral distance of needle placement but with a significantly greater degree of syringe angulation on the contralateral side.<sup>[13]</sup>To make early bone contact near the anterior border of the ramus, anterior to the mandibular foramen is the effect of inserting the needle in that angulation. The angulation of the needle is slowly altered by the barrel of the syringe by swinging toward the midline, thus allowing the needle to penetrate to progressively deeper positions through soft tissue. This process is continued until the appropriate depth of needle insertion (~20–25 mm) is attained.<sup>[13]</sup>

The level at which the technique of administrating IANB is the same as the direct technique of IANB, and, consequently, it has the same advantages and limitations. In addition to this, it is worth noting that the degree of tissue damage sustained to the contents of the pterygomandibular space may be greater than the direct IANB because of the movement of the inserted needle partially as toward the midline the barrel of the syringe is swung.

## Method

A cross-sectional survey was carried out in Dental College, in October 2016. The questionnaires were distributed to 200 postgraduate dental students and staffs. All the forms were completely filled by the participants and collected.

## Survey questionnaires

- Q.1. Are you aware about indirect method (FISCHER 1, 2, 3 TECHNIQUE) of giving IANB block?
- Yes
  - No
- Q.2. Which method does you practice for giving IANB?
- Direct
  - Indirect
- Q.3. How many times do you need to prick in indirect method (FISCHER 1, 2, 3 TECHNIQUE) of giving inferior alveolar nerve?
- 1
  - 2
  - 3
- Q.4. How many times do you need to prick in direct method of giving inferior alveolar nerve?
- 1
  - 2
  - 3
- Q.5. What is the sequence of anesthetizing nerves in direct method of giving IANB?
- Long buccal nerve, Lingual nerve, IAN
  - IAN, lingual nerve, long buccal nerve
  - Not Sure
- Q.6. What is the sequence of anesthetizing nerves in direct method of giving IANB?
- Long buccal nerve, lingual nerve, IAN
  - IAN, Lingual nerve, long buccal nerve
  - Not sure
- Q.7. Have you ever come across a situation where you had failure of local anesthesia in direct method of IANB?
- Yes
  - No
- Q.8. While using the direct technique of IANB, there were any instances when you got positive aspiration?
- Yes
  - No
- Q.9. In your dental practice, have you come across any complication while administering IANB?
- Yes
  - No
- Q.10. Which method of IANB in your opinion shows lesser chances of complications after administration?
- Direct
  - Indirect

## Result

Study showed there is significant need to conduct awareness programs to make surgeons aware about new and safe technique (Table 1).

## Discussion

Two techniques are described in the literature to reach the IAN where it enters the mandibular canal, namely, indirect and direct; these techniques differ in the number of movements required.<sup>[14,19]</sup>

**Table 1: Results of survey**

Questions	Correct	Majority	%
Awareness of indirect method	Yes	Yes	91
Method you practice	Direct or indirect	Direct	70
Prick in indirect method	1	1	50
Prick in direct method	2	1	54
Anesthetized nerve sequence (indirect)	Long buccal, lingual, IAN	IAN, lingual, long, buccal	50
Anesthetized nerve sequence (direct)	IAN, lingual, long, buccal	IAN, lingual, long, buccal	76
Failure indirect	Yes or no	Yes	71
Positive aspiration in direct	Yes or no	Yes	82
Complication	Yes or no	No	68
Better method	Direct or indirect	Direct	58

IAN: Inferior alveolar nerve

The approach most commonly used for anesthesia of the IAN in the United States is the traditional Halstead method,<sup>[15]</sup> a direct technique in which the IAN is reached by an intraoral access before it penetrates the mandibular canal. This block method has success rates from 71% to 87%,<sup>[16]</sup> and incomplete anesthesia is not uncommon. Furthermore, it has been shown that the indirect technique is ineffective in 15% of cases.<sup>[17]</sup>

More recently, they have suggested a local anesthetic technique for the lingual, buccal, and inferior alveolar nerves, taking the retromolar trigone as a reference. This technique is safer for patients with blood dyscrasias, yet is less effective than the conventional technique of IANB.<sup>[18]</sup>

The literature shows that failures in the anesthesia of the IAN occur due to several factors, such as lack of knowledge on the anatomical structures, lack of experience, technical errors, extremely anxious patient, inflammation or infection, damaged anesthetic solutions,<sup>[19]</sup> changes in anatomical structures, inadequate mouth opening, inadequate positioning of the needle, hurry, and needle deviation.

Normally, all dentists use the direct method of giving IANB, but in indirect method, there are less chances of getting positive aspiration and less chances of complications compare to direct technique. After conducting this survey, we got to know that many of postgraduates' even staffs also are not aware about the advantages of using indirect technique.

## Conclusion

This KAP survey gives us result that many of postgraduates and staffs are not aware about the technique. Hence, we should conduct some programs in which we can educate, change their attitude, and

encourage them to use much safer and another technique of giving IAN block.

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